Amendments to the Specification:

Please amend page 3, paragraph 7 as follows:

One drawback with the device 10c shown in Figure ~~1c~~1C is that it is not configured to determine the thickness, the total thickness variation, or the roughness of the backside of the wafer 30. Accordingly, none of the apparatuses described above with reference to Figures 1A-C are capable of adequately determining the characteristics of the wafer 30 typically used to assess whether the wafer 30 is ready for singulation and subsequent packaging operations.

Please amend page 8, paragraph 22 as follows:

The second topographical feature detector 140b can include a two-dimensional inspection camera 143 and/or a three-dimensional inspection camera 144. The two-dimensional inspection camera 143 can have a line-of-sight directed generally normal to the second surface 132 to detect the position, diameter, and/or surface features of the second topographical features 134. The surface features detected by the two-dimensional camera 143 can include the surface finish of the second topographical features 134, and/or whether adjacent topographical features 134 are inappropriately connected, for example with a solder bridge 137~~136~~. The three-dimensional inspection camera 144 can have a line-of-sight directed obliquely toward the second surface 132, for example, to detect the height of the second topographical features 134 above the second surface 132. In other embodiments, the second topographical feature detector 140b can include other devices or arrangements.

Please amend page 9, paragraph 24 as follows:

Figure 3A is an enlarged view of a portion of the apparatus 110 and the microelectronic substrate 130 described above with reference to Figure 2. In one aspect of the embodiment shown in Figure 3A, the stylus 141 can include a stylus tip 145 that moves over the first surface 131 during operation. The first topographical features 133 of the first surface 131 can include a plurality of recesses 135 and

projections 136. As the stylus tip 145 passes over the recesses 135 and projections 136, the first topographical feature detector 140a can detect, track and store measurements of the distance "*D*" between a reference plane 146 and the first surface 131. A plurality of distance measurements *D* can then be integrated or otherwise manipulated to define a roughness measurement of the first surface 131. For example, the calculated roughness can be an arithmetic roughness (Ra) determined by the following equation:

$$Ra = \frac{1}{l}\int_o^l \{f(x)\}dx$$

where l = representative length

f(x) = function describing surface profile, with f(x) = 0 at its mean value

In one embodiment, the target range for *Ra* can be from about ~~13~~ thirteen microns to about ~~17~~ seventeen microns, and in other embodiments, the target range can have other values.

Please amend page 11, paragraph 29 as follows:

One feature of the apparatus 110 described above with reference to Figures 2 and 3A is that the second surface 132 of the microelectronic substrate 130 is exposed while roughness and total thickness variation measurements are made on the first surface 131. Accordingly, the apparatus 110 can be less likely to damage the second topographical features 134, for example, when the second topographical features 134 include solder or gold bumps, or other protruding conductive elements.

Please amend page 12, paragraph 33 as follows:

In other embodiments, the apparatus 110 can have other arrangements. For example, as shown in Figure 4, the first topographical feature detector 140a can include a non-contact detector 142 in addition to or in lieu of the stylus 141 described above with reference to Figures 2 and 3A. In a further aspect of this embodiment, the non-contact detector 142 can issue emitted or incident radiation 147 (such as a laser beam) that strikes the first surface 131 of the microelectronic substrate 130 and returns

as reflected radiation 148. The reflected radiation 148 is received by a sensor of the non-contact detector 142. The radiation emitted and received by the non-contact detector 142 can include visible laser radiation in one embodiment, and can include other types of visible or non-visible radiation in other embodiments. In still a further embodiment, the non-contact detector 142 can include a receiver (such as a camera) that detects radiation emitted by a separate source (such as a light source) and reflected by the first surface 131. In any of these embodiments, the non-contact detector 142 can be configured to interpret the reflected radiation 148 (for example, by comparison to a fixed reference plane) to determine the roughness characteristics of the first surface 131 and the total thickness variation of the microelectronic substrate 130.

Amendments to the Drawings:

Enclosed herewith is an amended version of Figure 2, in which reference numeral 136 has been changed to reference numeral 137. In accordance with the Office's revised format, this drawing has been labeled "Replacement Sheet."